

REMARKS

In this Amendment, Claims 1, 7, 8, 10-12, and 18 have been amended. Claims 4-6 and 25 have been cancelled. Claims 13, 14, 16, 17, 21, 22, and 24 have been withdrawn from consideration. Claims 27-30 have been added to further claim aspects of the present invention. No new matter has been added.

Claims 1-3, 7-12, 15, 18-20, 23, and 26-29 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-3, 15 and 18-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Pataille (U.S. Pat. No. 6,520,507). This rejection is respectfully traversed.

At the outset, Applicants note that independent Claims 1 and 18 have been amended herein to recite limitations that are not present in the Pataille reference. The Pataille reference discloses the use of a sealing sleeve made of a PTFE compound, but does not disclose a vulcanized fluorocarbon elastomer dispersed in a thermoplastic material matrix as recited in amended Claims 1 and 18, and new independent Claim 28. Accordingly, Applicants' pending claims are novel. Further Pataille does not suggest the use of such dispersions in seal assemblies. Therefore, Applicants' seal assemblies are also non-obvious and patentable. Thus, reconsideration and withdrawal of the rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 25 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pataille (U.S. Pat. No. 6,520,507). This rejection is respectfully traversed.

Applicants note that Claim 18 has been amended to include, *inter alia*, the limitations of originally filed Claim 25 regarding the tangent delta of the elastomer comprising the seals. Typically, the tangent delta of a PTFE based seal is extremely low, between 0.01 and 0.05, in the typical automotive operating temperature range of -40 to 150°C. On the contrary, the tangent-delta value of elastomers is high, between 0.10 and 1.5, at the same temperature range. As discussed in Paragraph 0034 of the specification, ideally the ratio of recovery time to real time would be less than 1 to function as dynamic shaft seal without leakage. Due to the unique design of the present invention, using vulcanized fluorocarbon elastomer dispersed in a thermoplastic material matrix, the present invention is able to provide a dynamic seal having a tangent delta of between 0.05 and 1.0 using materials, such as PTFE, that would not otherwise be useful. Thus, reconsideration and withdrawal of the rejection is respectfully requested.

Claim 23 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Pataille (U.S. Pat. No. 6,520,507) in view of Johnston (U.S. App. Publ. No. 2002/0158421). This rejection is respectfully traversed.

Applicants note that Claim 18, from which Claim 23 depends, has been amended. Johnston provides no teachings to address the deficiencies in Pataille regarding Claim 18 as discussed above. Accordingly Claim 23 is not obvious for at

least the reasons discussed above regarding Claim 18. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 4-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pataille (U.S. Pat. No. 6,520,507) in view of Sakai (U.S. Pat. No. 5,206,293). This rejection is respectfully traversed.

At the outset, Applicants note that Claim 1, from which Claims 4 -12 depend, has been amended. Claim 1 and new Claim 28 include the recitation of a radial seal comprising a non-continuous phase vulcanized fluorocarbon elastomer dispersed in a continuous phase matrix comprising a thermoplastic material, and having a tangent-delta of less than about 1.0. New Claim 28 further includes limitations of the physical properties of the radial seal. Claims 4-6 have been cancelled, and Claims 7, 8, and 10-12 have been amended to be dependent on Claim 1.

The Sakai reference is directed to very limited fluorocarbon based thermoplastic materials that are not applicable for use in automotive applications due to their melting point of about 120°C. A dynamic seal made according to the material in Sakai's teachings would be subjected to melting and disintegration at the required automotive operating temperature and does not provide chemical resistance to modern automotive sealing oil and fluids. Further, the tensile properties disclosed in Sakai would be below the minimum tensile properties required for a dynamic seal application. Thus, reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

Applicants submit that a full and complete response has been made to the Office Action, and as such, the present application is in condition for allowance. Thus, favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (734) 354-5445.

Respectfully submitted,

Dated: March 13, 2006

By: Ronald W. Wangerow
Ronald W. Wangerow, Reg. No. 29,597

FREUDENBERG-NOK GENERAL PARTNERSHIP
Legal Department
47690 East Anchor Court
Plymouth, MI 48170-2455
Direct Line: (734) 354-5445
Facsimile: (734) 451-1445